

REMARKS/ARGUMENTS

Upon entry of the above amendment, claim 12 will have been canceled without prejudice or disclaimer of the subject matter recited therein. Claims 11, 20, and 21 will have been amended and are resubmitted for consideration by the Examiner. In view of the above, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections of all the claims pending in the present application, and submit that such action is appropriate and proper.

Initially, Applicants would like to express their appreciation to the Examiner for the detailed Final Official Action provided.

Turning to the merits of the action, the Examiner has objected to the drawings because of informalities. By the present amendment, Applicants have amended Figures 1 and 2 to eliminate the informalities. Thus, Applicants respectfully request that the Examiner withdraw this objection.

Claims 11, 12, 18, 21, and 22 were rejected under 35 U.S.C. § 103(a), as being unpatentable over SUZUKI et al. (U.S. Patent No. 5,742,704) in view of ANDREW (U.S. Patent No. 6,804,402). Claim 13 was rejected under 35 U.S.C. § 103(a), as being unpatentable over SUZUKI et al. (U.S. Patent No. 5,742,704) in view of ANDREW (U.S. Patent No. 6,804,402) and PARKER et al. (U.S. Patent No. 6,307,962). Claim 14 was rejected under 35 U.S.C. § 103(a), as being unpatentable over SUZUKI et al. (U.S. Patent No. 5,742,704) in view of ANDREW (U.S. Patent No. 6,804,402) and ENOKIDA (U.S. Patent No. 5,608,862). Claims 19 and 20 were rejected under 35 U.S.C. § 103(a), as being unpatentable over SUZUKI et al. (U.S. Patent No. 5,742,704) in view of ANDREW (U.S. Patent No. 6,804,402) and CURRY (U.S. Patent No. 5,710,636).

Claims 15-17 were rejected under 35 U.S.C. § 103(a), as being unpatentable over SUZUKI et al. (U.S. Patent No. 5,742,704) in view of ANDREW (U.S. Patent No. 6,804,402) and IMAIZUMI et al. (U.S. Patent No. 5,987,176).

As noted above, Applicants have canceled the rejected claim 12 and have amended claims 11, 20, and 21. In view of the herein-contained amendments and remarks, Applicants respectfully traverse the above rejections based on pending claims 11 and 13-22, and will discuss said rejections with respect to the pending claims in the present application as will be set forth hereinbelow. The amendments to the claims are not intended to limit or narrow the subject matter claimed in the above rejected claims, but merely to clarify the subject matter recited in the rejected claims.

Applicants' claims 11 and 13-19 generally relate to an image processing apparatus which comprises an orthogonal transformer configured to transform multi-bit image data into orthogonal transform coefficients, and a quantizer configured to quantize the orthogonal transform coefficients for each spatial frequency of the multi-bit image data. The spatial frequencies include a DC component, low frequency AC components, and high frequency AC components. A first number of quantization bits is assigned to the DC component, a second number of quantization bits is assigned to all the low frequency AC components, and a third number of quantization bits is assigned to all the high frequency AC components. The second number of quantization bits comprises a multiple of the first number of quantization bits, and the third number of quantization bits comprises a multiple of the first number of quantization bits. The image processing apparatus also has a block data generator which generates a block of data. The block of data is composed of the quantized data of

each spatial frequency. Further, the image processing apparatus has a frequency banding section which rearranges the quantized data in the generated block of data so as to band the quantized data of each spatial frequency and so as to align the quantized data of a spatial frequency of the generated block of data with the quantized data of the same spatial frequency of the next generated block of data, and which outputs, as bit serial data, the quantized data of the spatial frequency over a plurality of the rearranged blocks. Moreover, the image processing apparatus has a coder section which compresses the bit serial data. Claim 20 generally recites a related multifunction apparatus. Claims 21 and 22 generally recite related methods.

On the contrary, SUZUKI et al. relates to an image coding apparatus which produces transform coefficients, quantizes the transform coefficients to produce quantized coefficients each having bits of a predetermined number, converts the quantized coefficients to a one-dimensional string, and constructs coded data by multiplexing into a continuous bit string (Fig. 9, col. 8, lines 42-56). SUZUKI et al. teaches that bits are allocated to transform coefficients, according to a fixed bit allocation table shown in Fig. 8A. However, in Figs. 8A-8C, the number of quantization bits allocated to all the low frequency AC components is not a multiple of the number of quantization bits allocated to the DC component, and the number of quantization bits allocated to all the high frequency AC components is also not a multiple of the number of quantization bits allocated to the DC component. Thus, SUZUKI et al. does not teach, inter alia, that the number of quantization bits allocated to all the low frequency AC components comprises a multiple of the number of quantization bits allocated to the DC component, and does not teach, inter alia, that the number of quantization bits

allocated to all the high frequency AC components comprises a multiple of the number of quantization bits allocated to the DC component.

Further, as the Examiner admitted in the Final Official Action mailed on December 6, 2004, SUZUKI et al. does not disclose a frequency banding section which rearranges the quantized data in the generated block of data so as to band the quantized data of each spatial frequency and so as to align the quantized data of a spatial frequency of the generated block of data with the quantized data of the same spatial frequency of the next generated block of data.

Thus, the pending claims are clearly distinguished over SUZUKI et al.

Therefore, it is respectfully submitted that the features recited in Applicants' independent claims 11, 20 and 21 and dependent claims 13-19 and 22 are not disclosed in SUZUKI et al. cited by the Examiner.

ANDREW relates to a method and an apparatus for hierarchically encoding and decoding an image. ANDREW also disclose the rearrangement of coefficients (col. 6, lines 48-53, col. 8, lines 22-44). However, ANDREW does not teach that the number of quantization bits assigned to all the low frequency AC components comprises a multiple of the number of quantization bits assigned to the DC component, and also does not teach that the number of quantization bits assigned to all the high frequency AC components comprises a multiple of the number of quantization bits assigned to the DC component. Thus, the pending claims are clearly distinguished over ANDREW.

Therefore, it is respectfully submitted that the features recited in Applicants' independent claims 11, 20 and 21, and dependent claims 13-19 and 22 are not disclosed in ANDREW cited by the Examiner. The combinations of the pending claims

also are clearly distinct from any proper combination of SUZUKI et al. and ANDREW, since neither SUZUKI et al. nor ANDREW discloses or suggests at least the above features recited in any of Applicants' claims. Thus, the pending claims are submitted to be patentable over the Examiner's proposed combination.

Also, with respect to dependent claims 13-19, since these claims are dependent from allowable independent claim 11, which is allowable for at least the reasons discussed *supra*, these dependent claims are also allowable for at least these reasons. Further, these dependent claims recite additional features which further define the present invention over the references of record.

Accordingly, the Examiner is respectfully requested to withdraw all rejections under 35 U.S.C. § 103(a).

Although the status of the present application is after final rejection, since the amendments merely clarify the present claimed invention, no new issues are raised, and entry of the present amendment is respectfully requested and is submitted to be appropriate in accordance with 37 C.F.R 1.116.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections and an indication of the allowability of all the claims pending in the present application in due course.

SUMMARY AND CONCLUSION

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so. Applicants have amended the rejected claims and submitted the same for reconsideration by the Examiner. Applicants have discussed the disclosures of the applied references and contrasted the same with the recitations of the claims while noting the shortcomings of the disclosures of the references with respect thereto. Accordingly, Applicants have provided a clear evidentiary basis supporting the patentability of all claims in the present application and respectfully request an indication of the allowability of all the claims pending in the present application in due course.

Applicants note that this amendment is being made to advance prosecution of the application to allowance, and with respect to the claimed features argued as deficient in the prior art, should not be considered as surrendering equivalents of the territory between the claims prior to the present amendment and the amended claims. Further, no acquiescence as to the propriety of the Examiner's rejection is made by the present amendment.

Further, all amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions or comments regarding this Response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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AMENDMENT TO THE DRAWINGS

The attached replacement sheets of the drawings include changes to Figs. 1 and 2. The attached sheets replace the original sheets. The changes made to Figs. 1 and 2 are as follows:

Fig. 1 has been amended to add a legend "Prior Art".

Fig. 2 has been amended to add a legend "Prior Art".

Attachment : Replacement sheets (2)